

TECHNOLOGICAL RESEARCH IN SERVICE LABORATORIES

SEPTEMBER 1946

Abstracts of Scientific Papers

Announcement of the first series of abstracts of scientific articles (I. Spoilage of the Nitrogenous Fraction of Fish. 1. Microbiological flora in fish.) was made in the March 1946 issue of Commercial Fisheries Review. The second series to become available has been prepared by Dr. G. Ivor Jones, biochemist, Seattle Fishery Technological Laboratory, and is entitled:

"II. Vitamin A Assay Methods."

The cards are of standard 3-inch by 5-inch size, one of which is reproduced below as a sample. The material covered is highly technical and will be of interest mainly to specialists.

II DEPT. OF THE INTERIOR, FISH & WILDLIFE SERVICE 2.003

ADAMSON, D.G.M. AND EVERS, N. 1941.

EFFECT OF POLAR SOLVENTS ON VITAMIN A DETERMINATIONS BY THE SPECTROPHOTOMETRIC METHOD.

ANALYST 66, 106-7.

C.A. 35, 7994, 1941.

THE BRIT. PHARM. OF 1932 PRESCRIBES THAT UNSAPONIFIABLE MATTER SHALL BE DISSOLVED IN CYCLOHEXANE OR IN ABS. EtOH. IN THE ASSAY OF COD-LIVER OIL FOR VITAMIN A IT WAS FOUND THAT II DETNS. OF THE VITAMIN A CONTENT GAVE AN AV. VALUE 114% OF THAT OBTAINED WITH CYCLOHEXANE WHEN ISOPROPYL ALC. WAS USED FOR DISSOLVING THE UNSAPONIFIABLE MATTER. ON THE OTHER HAND THE AGREEMENT WITH VALUES OBTAINED WITH DEHYDRATED EtOH AGREED WELL WITH THOSE OBTAINED WITH THE ISOPROPYL ALC. WHEN THE VITAMIN DETN. IS MADE ON THE OIL ITSELF IT MAKES LITTLE DIFFERENCE WHICH SOLVENT IS USED. PROBABLY FREE VITAMIN A (ALC.) FORMS A COMPLEX IN POLAR SOLVENTS WHICH GIVES A HIGHER EXTINCTION COEFF. THAN IS OBTAINED IN NONPOLAR SOLVENTS AND PROBABLY ITS ESTER FORMS NO SUCH COMPLEX. FOR THIS REASON IT SEEMS DESIRABLE TO USE A NONPOLAR SOLVENT FOR DETNS. ON THE UNSAPONIFIABLE MATTER.

The Roman numeral in the upper left-hand corner indicates the general classification in which the card belongs (in this case, Vitamin A Assay Methods). The arabic numerals in the upper right-hand corner indicate the general contents of the paper in accordance with a cross-indexing system that has been worked out.

The second series, Vitamin A Assay Methods, is now available upon request from the Fishery Technological Laboratory, Fish and Wildlife Service, 2725 Montlake Boulevard, Seattle 2, Washington. As indicated above, the supply is limited, and distribution must be restricted to those in the industry who have a genuine need for these cards. Additional series will be announced in Commercial Fisheries Review as they are completed.



Ketchikan, Alaska

Samples of clams dug in this area were forwarded to College Park, Md., to be tested for mytilotoxine. One hundred pounds of salmon viscera and other trimmings were frozen and sent to Seattle, Wash., to be tried as fish-hatchery feed. From five species of salmon, 890 cans of separated viscera and other trimmed portions were processed or frozen, and they will be analyzed to determine the practicability of using these byproducts for human or animal feeding.



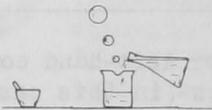
Other products canned experimentally were halibut fillets and halibut head paste, loaf, and sausage.



Boston, Mass.

Samples of commercial preparations of canned creamed finnan haddie and frozen precooked tuna were examined and tested. Eastport, Maine, sardine-canning experiments were carried out with the use of benzoates of sodium and magnesium in the brining tanks and with pressure steaming of the fish before they were packed. Neither attempt led to significant improvement. Four packs of spiced sardines were prepared.

With the mobile laboratory at New Bedford, Mass., bacteriological examinations of fillet-brining tanks were conducted and showed that, although brining is an effective aid in reducing the bacteria count of the fillets, the brine may come to contain a great number of bacteria, if it is held too long without being changed. The addition of a hypochlorite solution to the wash buckets used by the filleters for rinsing their knives and gloves also helped to lower the bacteria count of the fillets.



Mayaguez, Puerto Rico

Considerable aid was given in the planning of the construction of a 4-acre farm fish pond at Barceloneta. At a meeting with the fishermen of Naguabo, plans were made for obtaining supplies of gear and other materials and for marketing the catch more satisfactorily.

Twenty-three samples of fish from the Virgin Islands were examined, but no evidence of toxicity was found.

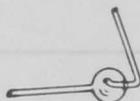
Seattle, Wash.

A Washington concern was assisted in the planning of an expansion of its plant.

Samples of anchovies were analyzed. Their oil content was found to fluctuate widely.

A series of pilchard meal samples were prepared for use in the development of better oil analysis methods.

The effect of the use of N.D.G.A. as an antioxidant is being tested on packaged pink salmon in frozen storage.



College Park, Md.

One hundred fifty-six packages of non-fatty fillets in cellophane, vinylite, saran, aluminum foil, polyethylene, and visten were prepared and frozen. They will be examined periodically to determine the merits of the wrappers.

After 2 months of frozen storage, no difference was observed between crabmeat samples packed in perforated cans and in heat-sealed cellophane bags. In the regular monthly examination of the frozen oysters, it was observed that an appreciable loss in moisture was beginning in one recently-developed package, while in one of the laminated vinyl packages there was a slight chemical odor although flavor was not affected. The foil packages are remaining in good condition.

Assistance was given in the design of shore plants to be installed at Crisfield, Md.

Samples of feeds submitted by the Association of Official Agricultural Chemists were analyzed for calcium and phosphorus as part of the Service's collaboration in the Association's comparisons.

Work was begun on the extraction of sterols from quahogs.

Thirty-five bleaching tests were run on refined menhaden oil with various amounts of adsorbents and organic peroxides. By fractional crystallization of the refined oil from a solvent, a good yield was obtained of a light, cold-pressed oil having an iodine number of 193.

Seven 1-pound tins of crabmeat were bacteriologically analyzed.

In tests conducted on Lake Erie in the mobile laboratory, it was shown that with the recently developed enrichment medium for enterococci a presumptive test could be run in 7 to 10 hours. Further work has since shown that both a presumptive and confirmation test can be run within 36 hours.

A temporary bacteriological laboratory was set up at Milford, Conn.

Analyses of Fishery Products

Unpublished data from the U. S. Fish and Wildlife Service Laboratory at College Park, Maryland.

Miscellaneous single analyses for food constituents, such as vitamin assays, mineral analyses, dry matter determinations, etc.

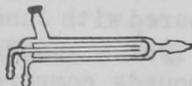
Food	Amount grams	Protein grams	Fat grams	Carbohy- drates grams	Calories	Calcium mg.	Phos- phorus mg.	Iron mg.	Vit. A int. units	Thiamine micro- grams	Ribo- flavin micrograms	Niacin mg.
Fresh or Cooked:												
Angler fish, simmered	100	23.9	1.1		105							
Carp, smoked fillets	100	17.1	6.5		125							
Croaker, baked at 375° F. for 20 minutes	100	28.6	7.1		180					136	90	5.5
Croaker, baked at 500° F. for 10 minutes	100	25.1	5.2		145					168	100	5.9
Herring, milt, fresh	100	14.0	4.3		95					None	160	
Skate wings, simmered	100	26.3	0.7		110							
Squid, boiled	100	19.8	1.4		90							
Striped bass, broiled	100	24.5	5.9		150							
Striped bass, pan fried	100	24.1	10.7		195							
Clams, hard, fresh meats	100	8.9	0.5	4.2	55							
Clams, Quahogs bay, steamed in shell	100	13.5	0.5	8.9	95					None	146	
Clams, Quahogs ocean, simmered	100	18.2	0.3	2.8	85					None	266	
Mussels, New England, simmered	100	17.9	3.1	5.0	120							
Oysters, Eastern, raw	100	8.5	1.6	4.2	65				500	180	80	
Canned:												
Alewives	100	16.2	7.9		135							
Herring roe	100	16.0	7.9		135							
Mackerel, California	100	19.3	15.9		220	343.0	384.0	1.42				
Shad, Columbia River	100	16.9	8.8		150			2.61				
Tuna, bluefin	100	21.6	22.6		290			0.97				
								1.48				
Clams, Atlantic, hard	100	9.6	0.9	4.2	65	87.3	125.3	6.23				
Clams, minced, razor	100	8.9	0.7	2.6	50	13.5	140.0	1.51				
Clams, Pacific, hard	100	7.2	2.5	6.1	75	10.0	101.0	3.10				
Crabmeat, Dungeness	100	20.5	1.2		95	52.0	213.0	0.94				
Oysters, Atlantic	100	9.2	2.7	2.1	70	48.4	126.4	8.36				
Oysters, Gulf	100	9.4	2.4	1.8	65	41.7	135.0	9.38				
Shrimp, dry pack	100	28.3	2.0		130	126.2	286.0	3.10				
Shrimp, wet pack	100	15.8	1.0		70	62.6	155.0	4.75				
Chowder, Manhattan clam*	100	2.7	2.6	9.3	70	40.1	51.9	1.77				
Chowder, New England clam*	100	6.5	1.2	6.5	65	28.8	85.9	4.65				
Chowder, New England fish*	100	7.3	1.4	5.0	60	22.9	67.9	3.09				

*To be mixed with an equal volume of water or milk.

Discussion of this table appears on p. 21.

Seven water samples were prepared and shipped by air to College Park for further study.

The table which appears on page 20 summarizes miscellaneous single analyses carried out at the Fishery Technological Laboratory, College Park, Md. These analyses are released in response to numerous requests for such information, but may not be truly representative of the various products.



FISHERY TECHNOLOGICAL LABORATORIES AND STATIONS

	<u>Address</u>	<u>In Charge</u>
Fishery Technological Laboratory	P. O. Box 128, College Park, Md.	Dr. L. A. Sandholzer Tel.- WARfield 5800
Fishery Products Laboratory	P. O. Box 647, Ketchikan, Alaska.	H. W. Magnusson, Tel.- 540
Fishery Research Laboratory	P. O. Box 1345, Mayaguez, P. R.	P. Vergne Roig, Tel.- 390
Fishery Technological Laboratory	2725 Montlake Blvd., Seattle 2, Wash.	M. E. Stansby, Tel.- EASt 5039
Fishery Technological Laboratory	Rm. 710, Appraisers Stores Bldg., 408 Atlantic Ave., Boston 10, Mass.	J. F. Puncochar, Tel.- LIBerty 0168
Fishery Technological Station	c/o B. H. Wilson Fisheries Co., Eastport, Me.	Wm. S. Hamm, Tel.- 141